11-21-00 1743 AF$

TRANSMITTAL OF APPEAL BRIEF (Small Entity)

Docket No. 116310.0030

In Re Application Of: Edward L. Carver, Jr.

Serial No.	Filing Date	Examiner	Group Art Unit
09/039,789	March 16, 1998	A. Soderquist	1743

Invention: **Apparatus for Making a Plurality of Reagent Mixtures and Analyzing Particle Distributions of the Reagent Mixtures**

TO THE ASSISTANT COMMISSIONER FOR PATENTS:

Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed on: **September 13, 2000**

Applicant is a small entity under 37 CFR 1.9 and 1.27.

A verified statement of small entity status under 37 CFR 1.27:

- ☐ is enclosed.
- ☒ has already been filed in this application.

The fee for filing this Appeal Brief is: **$155.00**

- ☒ A check in the amount of the fee is enclosed.
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  A duplicate copy of this sheet is enclosed.

Roger C. Phillips
Signature

Dated: **November 20, 2000**

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In the Application of:	) Examiner: A. Soderquist
Edward L. Carver, Jr.	) Group Art Unit: 1743
on: APPARATUS FOR MAKING A PLURALITY OF REAGENT MIXTURES AND ANALYZING PARTICLE DISTRIBUTIONS OF THE REAGENT MIXTURES	)
Serial No.: 09/039,789	)
Filed on: March 16, 1998	) (Our Docket No. 116310-0030)

Dated at Hartford, Connecticut this 20th day of November, 2000

Commissioner for Patents
Washington, D.C. 20231

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I. INTRODUCTION

In accordance with the provisions of 35 U.S.C. § 134 and 37 C.F.R. §§ 1.191 and 1.192, this Appeal Brief is submitted in triplicate in support of the appeal from the Office action dated April 13, 2000, finally rejecting claims 27-39, and the Advisory Action dated August 30, 2000, in which the Examiner agreed to enter, upon the filing of an appeal, Appellant's Amendment filed on August 14, 2000.

A. Real Party In Interest

Appellants have assigned their interests in the subject application to CDC Technologies, Inc. by an assignment executed on January 20, 1993.

B. Related Appeals and Interferences

None.

II. STATUS OF THE CLAIMS

A. Status of Pending Claims

Claims 27-35 and 38 are now pending in this application. Claims 27-35 and 38 have been finally rejected under 35 U.S.C. § 103(a) and each of these claims are on appeal.[1]

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[1] While claims 35, 38 and 39 (now canceled) were rejected in the final rejection dated April 13, 2000 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 11-14 of U.S. Patent No. 5,728,351, this rejection was believed to be overcome as reflected by the Examiner's statement in the Advisory action dated August 30, 2000 that the Terminal Disclaimer, filed with Appellant's Amendment filed August 14, 2000, was accepted and the change in inventorship papers have been found. If the Examiner is not in agreement that the obviousness-type double patenting rejection was overcome, then the Examiner is requested to please advise the undersigned.

B. Status of Canceled Claims

The subject application, U.S. Patent Application Serial No. 09/039,789, was filed on March 16, 1998, as a continuation of U.S. Patent Application Serial No. 08/370,023, now U.S. Patent No. 5,728,351, which, in turn, was a division of U.S. Patent Application Serial No. 08/007,111, now U.S. Patent No. 5,380,491. The subject application was filed with twenty-six (26) claims, namely claims 1-26.

In a Preliminary Amendment, dated March 16, 1998, original claims 1-26 were canceled, without prejudice, and new claims 27-35 were added. In an Amendment dated February 29, 2000, claims 36-39 were added. In an Amendment dated August 14, 2000, claims 36, 37 and 39 were canceled without prejudice. Thus, the following claims have been canceled, without prejudice, during prosecution of the subject application and are not on appeal herein: claims 1-26, 36, 37 and 39.

III. STATUS OF THE AMENDMENTS

In an Office Action dated April 13, 2000, claims 27-39 were finally rejected. Appellant responded to the Office Action (Final Rejection) in an Amendment under 37 C.F.R. § 1.116 filed August 14, 2000 amending claims 27, 35 and 38 and canceling claims 36, 37 and 39. An Advisory Action was issued on August 30, 2000 stating that upon the filing of an appeal the August 14th Amendment will be entered.

Based upon the Examiner's decision to enter Appellant's August 14th Amendment, claims 27, 35 and 38 are considered to have been amended accordingly.

IV. SUMMARY OF THE CLAIMED INVENTION

Appellant's claimed invention is directed to a multi-species blood testing method and apparatus for making a plurality of different reagent mixtures. In one embodiment of the present invention, and as illustrated in FIG. 1, an apparatus (10) for making a plurality of reagent mixtures comprising blood, and analyzing the particle distributions of the reagent mixtures, comprises at least one pump. An example of a pump unit (16) usable in accordance with this embodiment of the present invention is described in further detail, e.g., on page 10, line 10 through page 14, line 8 of Appellant's specification as originally filed. Referring again to FIG. 1, at least one reagent chamber (18, 19) is coupled in fluid communication with the at least one pump and contains at least one lysing agent. The lysing agent, when mixed with a blood sample, functions, e.g., to sufficiently effect at least a component separation of white blood cells, so that they can be differentiated, and at least one of the white blood cell subpopulations can be quantified (see page 9, lines 2-6 of Appellant's specification). A sensing unit (20) that defines a counting orifice for receiving a reagent mixture and analyzes a particle distribution of the reagent mixture may also be provided (for further details see page 15, line 6 through page 17, line 8).

In accordance with a particular feature of the present invention, the apparatus further comprises means for adjusting the volumetric ratio of blood to

the at least one lysing agent for creating a plurality of different reagent mixtures. Each of the different reagent mixtures corresponds to a different operator input indicative of a respective species of blood. The means also controls the at least one pump in response to each operator input, to pump predetermined volumes of blood and the at least one lysing agent in accordance with the blood/lysing agent ratio corresponding to the respective operator input and species of blood. The means further controls the at least one pump to (i) intermix the predetermined volumes of blood and the at least one lysing agent and thereby create the reagent mixture corresponding to the respective operator input, and (ii) introduce the reagent mixture through the counting orifice of the sensing unit to sense a particle distribution of the reagent mixture.

FIG. 1 illustrates an example of such a means that may comprise a processing and control unit (22), electrically connected toa keyboard unit (25) and display (24). The processing and control unit (22) controls a valve matrix (14) and a pump unit (16) to control the reagent mixture flow through a mixing cuvette (13) and a sensing chamber (20). Details concerning the operation of the foregoing devices may be found in Appellant's specification on page 17, line 9, through page 22, line 13. In one particular embodiment, the keyboard unit (25) comprises separate keys for certain species (e.g., a cat and a dog) and another key for other species as described on page 26, lines 6-15.

In another embodiment, a method is presented for making a plurality of different reagent mixtures comprising blood and analyzing particle distributions of the reagent mixtures, wherein each reagent mixture corresponds to a respective

operator input indicative of a respective species of blood. Referring again to FIG. 1, the method may be performed with an apparatus (10) that comprises at least one pump, at least one reagent chamber that contains at least one lysing agent (18, 19), a sensing unit (20) that defines a counting orifice that receives a reagent mixture and analyzes a particle distribution of the reagent mixture. In addition, the apparatus (10) may include a control unit (22) responsive to each operator input to control the at least one pump to make a respective reagent mixture that has a volumetric ratio of the at least one lysing agent to blood corresponding to the respective operator input and species of blood. Further, the control unit (22) may control the sensing unit to analyze a particle distribution of the reagent mixture. The method comprises the step of adjusting the volumetric ratio of the at least one lysing agent to blood in response to an operator input indicative of a respective species of blood, to correspond to the respective operator input and thereby form a predetermined reagent mixture corresponding to the respective operator input and species of blood. The adjusting step includes: selecting at least one lysing agent corresponding to the respective operator input; pumping with the at least one pump a predetermined volume of the at least one lysing agent corresponding to the respective operator input; pumping with the at least one pump a predetermined volume of at least one other reagent-mixture component comprising blood and corresponding to the respective operator input; and intermixing the predetermined volumes of the at least one lysing agent and the at least one other reagent-mixture component comprising blood, and in turn creating the predetermined reagent mixture corresponding to the respective operator input;

and introducing the predetermined reagent mixture through the counting orifice of the sensing unit and sensing a particle distribution of said reagent mixture.

In a further embodiment, an apparatus (10) is presented for making a plurality of reagent mixtures for multi-species hematology testing, and for sensing particle distributions of the mixtures for multi-species hematology analysis is presented. The apparatus (10) comprises at least one reagent chamber containing at least one lysing agent (18, 19), and at least one pump coupled in fluid communication with the at least one reagent chamber. At least one valve may be coupled in fluid communication with the at least one pump for introducing a blood specimen corresponding to any one of a plurality of species. A control unit (22) may be electrically coupled to the at least one pump to adjust the volumetric ratio of the blood specimen to the at least one lysing agent in correspondence with an operator input (e.g., via the keyboard unit 25) which, in turn, corresponds to a respective one of the plurality of species. A mixing chamber (e.g., the mixing cuvette 13) may be coupled in fluid communication with the at least one pump to receive the pumped volumes of the respective blood specimen and the at least one lysing agent to create a reagent mixture that has a blood to lysing agent volumetric ratio corresponding to the operator input and a respective species. Accordingly, a plurality of different reagent mixtures may be created that have a plurality of blood to lysing agent volumetric ratios corresponding to a plurality of different operator inputs and respective species. Further, a sensing unit (20) may be provided that defines at least one counting orifice to receive a reagent mixture and analyze a particle distribution of the reagent mixture.

V. ISSUES

The issues raised in the Final Rejection requiring resolution in this Appeal are as follows:

A. Whether claims 27-35 and 38 are properly rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto in view of Kabata, Taylor, Dixon and Callan or Weiser.

B. Whether claims 27-35 and 38 are properly rejected under 35 U.S.C. § 103(a) as being unpatentable over Cellect Hematology in view of Kabata, Taylor, Dixon and Callan or Weiser.

VI. GROUPING OF CLAIMS ON APPEAL

The claims on appeal before the Board of Patent Appeals and Interferences are claims 27-35 and 38. All of claims 27-35 and 38 relate to multi-species blood testing and, more particularly, claims 27-34 relate to a method for making a plurality of different reagent mixtures comprising blood and analyzing a particle distribution of the reagent mixtures, wherein each reagent mixture corresponds to a respective operator input indicative of a respective species of blood. Claim 35 relates to an apparatus for making a plurality of reagent mixtures comprising blood and analyzing particle distributions of the reagent mixtures. Claim 38 relates to an apparatus for making a plurality of reagent mixtures for

multi-species hematology testing, and for sensing particle distributions of the mixtures for multi-species hematology analysis.

The claims on appeal are set forth in the Appendix, and the independent claims 27, 35 and 38 are set forth below:

27. A method for making a plurality of different reagent mixtures comprising blood and analyzing particle distributions of the reagent mixtures, wherein each reagent mixture corresponds to a respective operator input indicative of a respective species of blood, and the method is performed with an apparatus having at least one pump, at least one reagent chamber containing at least one lysing agent, a sensing unit defining a counting orifice for receiving a reagent mixture and analyzing a particle distribution of the reagent mixture, and a control unit responsive to each operator input to control the at least one pump to make a respective reagent mixture having a volumetric ratio of the at least one lysing agent to blood corresponding to the respective operator input and species of blood, and to further control the sensing unit to analyze a particle distribution of the reagent mixture, the method comprising the following steps:

adjusting the volumetric ratio of the at least one lysing agent to blood in response to an operator input indicative of a respective species of blood, to correspond to the respective operator input and thereby form a predetermined reagent mixture corresponding to the respective operator input and species of blood, said adjusting including:

selecting at least one lysing agent corresponding to the respective operator input;

pumping with the at least one pump a predetermined volume of the at least one lysing agent corresponding to the respective operator input;

pumping with the at least one pump a predetermined volume of at least one other reagent-mixture component comprising blood and corresponding to the respective operator input;

intermixing the predetermined volumes of the at least one lysing agent and the at least one other reagent-mixture component comprising blood, and in turn creating the predetermined reagent mixture corresponding to the respective operator input; and

introducing the predetermined reagent mixture through the counting orifice of the sensing unit and sensing a particle distribution of said reagent mixture.

35. An apparatus for making a plurality of reagent mixtures comprising blood and analyzing particle distributions of the reagent mixtures, comprising:

at least one pump;

at least one reagent chamber coupled in fluid communication with the at least one pump and containing at least one lysing agent;

a sensing unit defining a counting orifice for receiving a reagent mixture and analyzing a particle distribution of the reagent mixture; and

means for adjusting the volumetric ratio of blood to the at least one lysing agent for creating a plurality of different reagent mixtures, each corresponding to a different operator input indicative of a respective species of blood, and for controlling the at least one pump in response to each operator input to pump predetermined volumes of blood and the at least one lysing agent in accordance with the blood/lysing agent ratio corresponding to the respective operator input and species of blood, said means further controlling the at least one pump to

(i) intermix the predetermined volumes of blood and the at least one lysing agent and thereby create the reagent mixture corresponding to the respective operator input, and

(ii) introduce the reagent mixture through the counting orifice of the sensing unit for sensing a particle distribution of the reagent mixture.

38. An apparatus for making a plurality of reagent mixtures for multi-species hematology testing, and for sensing particle distributions of the mixtures for multi-species hematology analysis, comprising:

at least one reagent chamber for containing at least one lysing agent;

at least one pump coupled in fluid communication with the at least one reagent chamber;

at least one valve coupled in fluid communication with the at least one pump for introducing a blood specimen corresponding to any one of a plurality of species;

a control unit electrically coupled to the at least one pump for adjusting the volumetric ratio of the blood specimen to the at least one lysing agent in correspondence with an operator input corresponding to a respective one of the plurality of species;

a mixing chamber coupled in fluid communication with the at least one pump for receiving the pumped volumes of the respective blood specimen and the at least one lysing agent and creating a reagent mixture therefrom having a blood to lysing agent volumetric ratio corresponding to the operator input and respective species to thereby create a plurality of different reagent mixtures having a plurality of blood to lysing agent volumetric ratios corresponding to a plurality of different operator inputs and respective species; and

a sensing unit defining at least one counting orifice for receiving a reagent mixture and analyzing a particle distribution of the reagent mixture.

Pursuant to 37 C.F.R. § 1.192(c)(7), Appellant hereby groups the pending claims for purposes of appeal as follows:

35 U.S.C. § 103(a) over Yamamoto in view of Kabata, Taylor, Dixon and Callan or Weiser:	Rejected claims stand or fall together
35 U.S.C. § 103(a) over Cellect Hematology in view of Kabata, Taylor, Dixon and Callan or	Rejected claims stand or fall together

Weiser:

VII. APPELLANT'S ARGUMENTS

A. The Examiner's Rejection of Claims 27-35 and 38 over Yamamoto in view of Kabata, Taylor, Dixon and Callan or Weiser.

Claims 27-35 and 38 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,030,888 to Yamamoto et al. (below referred to as "Yamamoto") in view of the publications authored by Kabata et al. and entitled "Hematologic Values of New Zealand White Rabbits Determined by Automated Flow Cytometry" (below referred to as "Kabata"), Taylor et al. and entitled "An Evaluation of DNA Fluorochromes, Staining Techniques, and Analysis for Flow Cytometry" (below referred to as "Taylor"), and Dixon et al. and entitled "Electronic Counting of Dog Leucocytes. Discrepancies Arising from Calibration with Coulter Standard 4C and with the Haemocytometer" (below referred to as "Dixon"), Callan et al. and entitled "Evaluation of an Automated System for Hemoglobin Measurement in Animals" (below referred to as "Callan") or Weiser and entitled "Modification and Evaluation of a Multichannel Blood Cell Counting System for Blood Analysis in Veterinary Hematology" (below referred to as "Weiser"). Appellant respectfully traverses the rejection as none of these references teach or suggest adjusting the volumetric ratio of lysing agent to blood in correspondence with an operator input indicative of the species of the blood as defined in each of Appellant's independent claims 27, 35, and 38.

In particular, Yamamoto shows an automatic blood analyzer but fails to teach or suggest an apparatus comprising a control unit or like means for adjusting the volumetric ratio of lysing agent to blood in correspondence with an

operator input indicative of the species of the blood. Rather, as recognized by the Examiner, Yamamoto discloses a system that is fixed to make the same dilution ratios, with the same volumes of reagent-mixture components for every blood sample.

Kabata likewise does not teach or suggest adjusting or modifying the volumetric ratio of lysing agent to blood to correspond to an operator input and species, as recited in independent claims 27, 35 and 38. Kabata's suggestion to adapt the commercially-available software for human blood so that it may be better used for research purposes in connection with animal blood concerns changing the histogram thresholds to accommodate animal (rabbit), as opposed to human cell types. The thresholds divide the cell populations on the histograms, and they cannot be changed on the systems identified (see, for example, Figure 2 of Kabata showing the thresholds in solid lines). Accordingly, Kabata suggests that the software might be adapted for research purposes to adjust the histogram thresholds to better accommodate the animal cell types tested. The "Technicon H1" software identified by Kabata similarly modified the histogram thresholds for rats and dogs, but did not require different reagent mixtures for the different species. Accordingly, Kabata makes no teaching or suggestion of adjusting or creating different reagent mixtures in response to different operator inputs, much less adjusting the volumetric ratio of lysing agent to blood to correspond to any one of a plurality of different operator inputs and respective species, as recited in independent claims 27, 35 and 38. Thus, Kabata does not teach or suggest modification of Yamamoto to achieve the claimed invention.

Taylor discusses various staining techniques for flow cytometry, but does not suggest adjusting or creating different reagent mixtures.

Accordingly, Taylor does not materially add to the teachings of Yamamoto and Kabata with respect to the present invention.

Callen is not prior art with respect to the present invention. Callen was published in October 1992, less than one year prior to the effective filing date of the present application (January 21, 1993). In any event, and without admitting that Callen is prior art with respect to the present invention, Callen shows evaluation of a system for hemoglobin measurement in dogs, cats, horses, and cows. Although Callen summarizes test result range differentials between those species, Callen does not suggest alteration of the testing process for different species. Thus, Callen does not teach or suggest changing the ratio of lysing agent to blood for different species, but rather effectively teaches away from doing so by showing acceptable results obtained without regard to species during the actual testing. Therefore, even if Callen was prior art with respect to the present invention, which it is not, it would not materially add to the teachings of Yamamoto, Kabata, and Taylor with respect to the present invention.

Weiser discusses various hematological techniques for different species, but does not suggest adjusting or creating different reagent mixtures. Weiser shows alteration of a device aperture current in order to count particles of sizes specific to common veterinary subjects. Weiser also shows doubling the dilution ratio where the particles are too numerous to be counted accurately by the subject device. Weiser does not make any suggestion to adjust the volumetric ratio of lysing agent to blood according to the subject species. Accordingly, Weiser does not materially add to the teachings of Yamamoto, Kabata, Taylor, and Callen with respect to the present invention.

Dixon shows experimental results derived from tests using non-standard concentrations of the lysing agent Zapoglobin on canine leucocytes. In

sum, Dixon concludes that adjusting the volume of the lytic agent has no significant effect, but rather increasing the time of exposure to the standard concentration of the lytic agent did significantly increase lysis. Specifically, Dixon states in the abstract on page 249: "Cannine leucocytes did not show significantly increased lysis when subjected to Zapoglobin at approximately four times the standard concentration, but did do so on exposure to the standard concentration for longer than five minutes". See also FIG. 2 on page 251 where the effect of high and low concentrations of Zapoglobin on leucocyte count are compared reflecting virtually no difference.

Accordingly, Dixon specifically teaches that changing the standard concentration of lytic agent has no significant effect on increasing lysis, and therefore Dixon, in effect, teaches away from adjusting the volume of lyse to blood in response to different operator inputs indicative of different species, as recited in the independent claims. Rather, if anything, Dixon might suggest that one could change the exposure time to the standard concentration of the lytic agent in order to increase or decrease lysis. The paragraph cited by the Examiner at page 252 of Dixon similarly in no way teaches or suggests the present invention as recited in the independent claims. Rather, this paragraph merely reiterates the conclusions set forth in the abstract on page 249.

The non-obvious nature of the present invention over Dixon is further evidenced by the more than 10 year period between the publishing of the Dixon reference and the filing of the present application. Although Dixon taught that there was no concentration dependent effect for the Zapoglobin lysing agent on canine leukocytes, a commercial embodiment of the present invention does accurately analyze canine leucocytes via automatic adjustment of lysing agent mixtures upon the pressing of a button corresponding to the canine species, in

spite of the contrary teachings of Dixon. Thus, it would not have been obvious for one of average skill in the pertinent art to apply the teachings of Dixon in order to derive the present invention.

In a telephone interview with Examiner Soderquist conducted on November 8, 2000, for which the Examiner is thanked for the courtesy extended therein, the Examiner agreed that none of Kabata, Taylor, and Callan or Weiser cure the deficiencies noted above with respect to Yamamoto. The Examiner did assert, however, that Dixon teaches selecting and optimizing a lysing agent concentration for use with a particular machine, i.e. a "Coulter counter" in the context of canine leucocytes. [2] However, while Dixon is somewhat unclear as to whether it teaches selecting and optimizing a reagent concentration for a particular species, Dixon, clearly, does not teach or suggest varying the volumetric ratio of lysing agent to blood when changing from one species of animal to another. Instead, as discussed above, Dixon teaches away from varying the volumetric ratio of lysing agent to blood.

It has long been held that where a reference teaches away from a proposed combination, an assertion of obviousness will not be upheld. In particular, "in considering the references in less than their entireties, i.e., in disregarding disclosures in the references that diverge from and teach away from the invention at hand" during an obviousness analysis is reversible error. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 220 USPQ 303, 311 (Fed. Cir. 1983) (noting *Application of Kuderna and Phillips*, 165 USPQ 575 (C.C.P.A. 1970)). Also, where "[the closest prior art] would likely *discourage* the art worker from attempting the substitution suggested by [the inventor/patentee]" an assertion of

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[2] The Coulter counter referred to in Dixon does not provide for varying the volumetric ratio of lysing agent to blood sample, similar to the device disclosed by Yamamoto described above and CELLECT™ Hematology Systems discussed below.

obviousness will not be upheld. See e.g., *Gillette Co. v. S.C. Johnson & Sons, Inc.*, 16 USPQ2d 1923, 1927 (Fed. Cir. 1990).

As discussed above, Dixon states that "Cannine leucocytes did not show significantly increased lysis when subjected to Zapoglobin at approximately four times the standard concentration, but did do so on exposure to the standard concentration for longer than five minutes". See also FIG. 2 on page 251 where the effect of high and low concentrations of Zapoglobin on leucocyte count are compared and reflect virtually no difference. These two teachings of Dixon clearly "diverge from" the present invention and would "discourage" the skilled artisan from varying the volumetric ratio of lysing agent to blood as defined in each of Appellant's independent claims 27, 35 and 38. Accordingly, Dixon does not cure the deficiencies noted above with respect to Yamamoto and the other cited references.

The Examiner also asserted during the telephone interview that Dixon alludes to the fact that many species are encountered in veterinary work (see page 249) and Halliday reported increasing Zapoglobin concentration to reduce over-counting of bovine leucocytes in a Coulter counter (see page 252).[3] However, this does not teach or suggest changing concentration from one species to the next, nor does it remove or minimize the primary conclusion of Dixon that increasing the concentration of Zapoglobin does not have a significant effect. Rather, at most, Dixon suggests that the "4C" standard of calibrating Coulter counters may not work for canine leucocytes because the canine cell sizes are different than that of the cells used in the 4C calibration standard (see page 249). Therefore, Dixon merely suggests that Coulter counters, which apply the same

[3] It should be noted that only in hindsight, as discussed below, can the mere reporting of increasing Zapoglobin concentration to reduce over-counting of bovine leucocytes in a Coulter counter itself suggest or render obvious varying the volumetric ratio of lysing agent to blood from one species to another as defined in each of claims 27, 35 and 38.

concentration from sample to sample, may require a different calibration standard for veterinary applications. Clearly, Dixon does not teach or suggest a different type of counter which changes the volumetric ratio of lysing agent to blood from one species to the next, as recited in the independent claims. To the contrary, Dixon assumes that the reader will continue to use the Coulter counter (see page 249).

Moreover, only in hindsight, using Appellant's own teaching of varying the volumetric ratio of lysing agent to blood among species of animals; ignoring Dixon's teaching that there is no difference between various concentrations of the lysing agent Zapoglobin; and picking out the statement that Halliday reported that an increase in Zapoglobin concentration reduced over-counting of bovine leucocytes; can one arrive at the (erroneous) conclusion that Dixon suggests varying the concentration of lysing agents among species of animals.

Therefore, it is respectfully submitted that independent claims 27, 35 and 38 are unobvious over Yamamoto in view of Kabata, Taylor, Dixon and Callan or Weiser, for at least the foregoing reasons. Because claims 28-34 each depend from one of these independent claims, it is respectfully submitted that these dependent claims are likewise unobvious over the prior art references of record for at least the same reasons.

B. The Examiner's Rejection of Claims 27-35 and 38 over Cellect™ Hematology in view of Kabata, Taylor, Dixon and Callan or Weiser.

Claims 27-35 and 38 also stand rejected under 35 U.S.C. § 103 as being unpatentable over the publication entitled "The CELLECT™ Hematology Systems from Instrumentation Laboratory" (below referred to as "CELLECT™ Hematology") in view of Kabata, Taylor, Dixon and Callan or Weiser. As described above with respect to Yamamoto, CELLECT™ Hematology does not teach or suggest an apparatus comprising a control unit or like means for adjusting the volumetric ratio of lysing agent to blood in correspondence with an operator input indicative of the species of the blood, as recited in each of the independent claims 27, 35 and 38. Rather, like Yamamoto and as also recognized by the Examiner, CELLECT™ Hematology teaches systems that are fixed to make the same dilution ratios, with the same volumes of reagent-mixture components for every blood sample. Accordingly, CELLECT™ Hematology fails to cure the deficiencies noted above with respect to each of the references applied by the Examiner.

Therefore, it is respectfully submitted that amended independent claims 27, 35 and 38, are unobvious over CELLECT™ Hematology in view of Kabata, Taylor, Dixon and Callan or Weiser, for at least the foregoing reasons. Because claims 28-34 each depend from one of these independent claims, it is respectfully submitted that these dependent claims are likewise unobvious over the prior art references of record for at least the same reasons.

IX. CONCLUSION

The issues involved in this Appeal concern prior art rejections under 35 U.S.C. § 103(a) over Yamamoto in view of Kabata, Taylor, Dixon and Callan or Weiser and CELLECT™ Hematology in view of Kabata, Taylor, Dixon and Callan or Weiser.

None of the references of record teach or suggest varying the volumetric ratio of lysing agent to blood from one species of animal to another as defined in each of Appellant's independent claims 27, 35 and 38.

Accordingly, for the foregoing reasons, reversal of the Final Rejection of Claims 27-35 and 38 is warranted and such action is earnestly solicited.

No additional fee is believed to be required in connection with this filing. However, if a fee is required, or otherwise if necessary to cover any deficiency in fees already paid, authorization is hereby given to charge our deposit account no. 50-1631.

Respectfully submitted,

November 14, 2000

By _____
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APPENDIX

A method for making a plurality of different reagent mixtures comprising blood and analyzing particle distributions of the reagent mixtures, wherein each reagent mixture corresponds to a respective operator input indicative of a respective species of blood, and the method is performed with an apparatus having at least one pump, at least one reagent chamber containing at least one lysing agent, a sensing unit defining a counting orifice for receiving a reagent mixture and analyzing a particle distribution of the reagent mixture, and a control unit responsive to each operator input to control the at least one pump to make a respective reagent mixture having a volumetric ratio of the at least one lysing agent to blood corresponding to the respective operator input and species of blood, and to further control the sensing unit to analyze a particle distribution of the reagent mixture, the method comprising the following steps:

adjusting the volumetric ratio of the at least one lysing agent to blood in response to an operator input indicative of a respective species of blood, to correspond to the respective operator input and thereby form a predetermined reagent mixture corresponding to the respective operator input and species of blood, said adjusting including:

selecting at least one lysing agent corresponding to the respective operator input;

pumping with the at least one pump a predetermined volume of the at least one lysing agent corresponding to the respective operator input;

pumping with the at least one pump a predetermined volume of at least one other reagent-mixture component comprising blood and corresponding to the respective operator input;

intermixing the predetermined volumes of the at least one lysing agent and the at least one other reagent-mixture component comprising blood, and in turn creating the predetermined reagent mixture corresponding to the respective operator input; and

introducing the predetermined reagent mixture through the counting orifice of the sensing unit and sensing a particle distribution of said reagent mixture.

28. A method as defined in claim 27, wherein the reagent-mixture components of a plurality of the different reagent mixtures include (i) blood and (ii) at least one lysing agent, and the method comprises the steps of:

in response to each of a plurality of different operator inputs, selecting the ratio of blood to the at least one lysing agent in the corresponding reagent mixture;

pumping with the at least one pump a predetermined volume of the at least one selected lysing agent corresponding to the respective blood/lysing agent ratio;

pumping with the at least one pump a predetermined volume of blood corresponding to the respective blood/lysing agent ratio; and

intermixing the predetermined volumes of blood and the least one lysing agent, and in turn creating a reagent mixture corresponding to the respective operator input.

29. A method as defined in claim 28, comprising the steps of:

in response to each of a plurality of operator inputs, selecting the ratio of blood to at least one first lysing agent and at least one second lysing agent in the respective reagent mixture;

pumping with the at least one pump a predetermined volume of the at least one first lysing agent corresponding to the respective blood/lysing agent ratio;

pumping with the at least one pump a predetermined volume of the at least one second lysing agent corresponding to the respective blood/lysing agent ratio;

pumping with the at least one pump a predetermined volume of blood corresponding to the respective blood/lysing agent ratio; and

intermixing the predetermined volumes of blood and the first and second lysing agents, and in turn creating a reagent mixture corresponding to the respective operator input.

30. A method as defined in claim 27, further comprising the steps of:

providing a database comprising data indicative of (i) a plurality of animal species, and (ii) a plurality of different reagent mixtures and the predetermined volumes

of the reagent-mixture components of each reagent mixture, wherein each reagent mixture corresponds to one or more of the plurality of animal species;

in response to each operator input corresponding to a respective one of the plurality of animal species, selecting one of the plurality of reagent mixtures corresponding to the respective animal species; and

pumping with the at least one pump the predetermined volumes of the reagent-mixture components, and in turn creating the reagent mixture corresponding to the respective animal species.

31. A method as defined in claim 30, wherein the at least one other reagent-mixture component is blood.

32. A method as defined in claim 30, wherein the at least one other reagent-mixture component includes (i) a predetermined volume of blood, and (ii) a predetermined volume of diluent.

33. A method as defined in claim 30, wherein the reagent-mixture components of the plurality of reagent mixtures are selected from the group including: (i) a blood sample of each of a plurality of different animal species, (ii) diluent, (iii) a first lysing agent, and (iv) a second lysing agent.

34. A method as defined in claim 27, further comprising the steps of:

intermixing the predetermined volumes of the at least one lysing agent and the at least one other reagent-mixture component in a mixing chamber, and in turn creating the reagent mixture in the mixing chamber; and

pumping the reagent mixture from the mixture chamber into the sensing unit for sensing the particle distribution of the reagent mixture.

35. An apparatus for making a plurality of reagent mixtures comprising blood and analyzing particle distributions of the reagent mixtures, comprising:

at least one pump;

at least one reagent chamber coupled in fluid communication with the at least one pump and containing at least one lysing agent;

a sensing unit defining a counting orifice for receiving a reagent mixture and analyzing a particle distribution of the reagent mixture; and

means for adjusting the volumetric ratio of blood to the at least one lysing agent for creating a plurality of different reagent mixtures, each corresponding to a different operator input indicative of a respective species of blood, and for controlling the at least one pump in response to each operator input to pump predetermined volumes of blood and the at least one lysing agent in accordance with the blood/lysing agent ratio corresponding to the respective operator input and species of blood, said means further controlling the at least one pump to

(i) intermix the predetermined volumes of blood and the at least one lysing agent and thereby create the reagent mixture corresponding to the respective operator input, and

(ii) introduce the reagent mixture through the counting orifice of the sensing unit for sensing a particle distribution of the reagent mixture.

38. An apparatus for making a plurality of reagent mixtures for multi-species hematology testing, and for sensing particle distributions of the mixtures for multi-species hematology analysis, comprising:

at least one reagent chamber for containing at least one lysing agent;

at least one pump coupled in fluid communication with the at least one reagent chamber;

at least one valve coupled in fluid communication with the at least one pump for introducing a blood specimen corresponding to any one of a plurality of species;

a control unit electrically coupled to the at least one pump for adjusting the volumetric ratio of the blood specimen to the at least one lysing agent in correspondence with an operator input corresponding to a respective one of the plurality of species;

a mixing chamber coupled in fluid communication with the at least one pump for receiving the pumped volumes of the respective blood specimen and the at least one lysing agent and creating a reagent mixture therefrom having a blood to lysing agent volumetric ratio corresponding to the operator input and respective species to thereby

create a plurality of different reagent mixtures having a plurality of blood to lysing agent volumetric ratios corresponding to a plurality of different operator inputs and respective species; and

a sensing unit defining at least one counting orifice for receiving a reagent mixture and analyzing a particle distribution of the reagent mixture.